

REMARKS

After entry of the above amendments, claims 1-36 will be pending in the above identified application. Claims 1-6, 8, and 10-16 have been amended to correct clerical and/or typographical error(s) and/or to delete unnecessary language. New claims 17-36 correspond to some of the original claims and are supported in the specification. No new matter has been added.

§ 101 Claim Rejections

Claims 1-9 have been rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. The Office action states:

Claims 1-9 are drawn to a method for financial estimation that is not tied to any technological art. The claimed invention is directed merely to human making mental computations and manually plotting results on paper, and thus is nothing more than an abstract idea, which is not tied to any technological art, and is not a useful art as contemplated by the constitution. The abstract idea does not become a technological art merely by the recitation in the claim of “transforming physical media into a chart” and “physically plotting a point on said chart”. (See *Ex parte Bowman*, 61 USPQ2d 1669, 1671 (Bd. Pat. App. & Inter. 2001) (Unpublished).

(April 14, 2003 Office action, pg. 2).

Claims 1-9, however, do not recite “transforming physical media into a chart” or “physically plotting a point on said chart.” Claim 1 recites a “method for financial estimation.” Thus, under the Federal Circuit’s decision in *AT&T Corp v. Excel Communications Inc.*, “the method claims at issue fall within the “process” category of the four enumerated categories of patentable subject matter in Section 101.” 50 U.S.P.Q.2d (BNA) 1447, 1452 (Fed. Cir. 1999).

The Office action contends that claims 1-9 are directed to non-statutory subject matter because claims 1-9 are “not tied to any technological art, environment, or machine.” *Ex parte Bowman*, 61 U.S.P.Q.2d (BNA) 1669, 1671 (Bd. Pat. App. & Inter. 2001). The Federal Circuit, however, has explicitly held that a claimed invention is properly within the statutory scope of 35 U.S.C. § 101 as long as a “useful, concrete, and tangible result” is produced. *AT&T*, 50 U.S.P.Q.2d at 1451 (quoting *State Street Bank & Trust Co. v. Signature Financial Group Inc.*, 47 U.S.P.Q.2d (BNA) 1596, 1601 (Fed. Cir. 1998)). There are no requirements that the claims be tied to any technological art, environment, or machine. In fact, the Federal Circuit clearly stated that “the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter.” *Id.* at 1453 (quoting *State Street*, 47 U.S.P.Q.2d at 1602 and *In*

re Alappat, 31 U.S.P.Q.2d (BNA) 1545, 1557 (Fed. Cir. 1994)). In addition, the mere fact “[t]hat the product is numerical is not a criterion of whether the claim is directed to statutory subject matter.” Id. at 1452 (quoting Arrhythmia Research Tech Inc. v. Corazonix Corp., 22 U.S.P.Q.2d (BNA) 1033, 1039 (Fed. Cir. 1992)).

Claim 1, as amended, recites “forming a control variate based upon the estimated value of the portfolio, the estimated aggregated value of the portfolio, and an expected value of the aggregate value of the portfolio.” Claim 8, as amended, recites “forming a control variate based upon the value of the portfolio, the aggregate value for the portfolio, and an expected value of the aggregate value for the portfolio.” In State Street, the claimed process, which “takes data representing discrete dollar amounts through a series of mathematical calculations to determine a final share price,” was held to be patentable subject matter as the final share price was considered to be a useful, concrete, and tangible result. Id. at 1452 (citing State Street, 47 U.S.P.Q.2d at 1601). Additionally, in AT&T, the claimed process, which “uses the Boolean principle . . . to determine the value of the PIC indicator,” was held to be patentable subject matter because the PIC indicator value was considered to be a useful, concrete, and tangible result. Id. Therefore, applicant respectfully submits that claims 1 and 8 are also directed to patentable subject matter because both claims produce a useful, concrete, and tangible result – a control variate – which is used to estimate portfolio values.

Accordingly, it is respectfully submitted that claims 1 and 8 satisfy the requirements under 35 U.S.C. § 101 as both claims produce a useful, concrete, and tangible result. Given that claims 2-7 and 9 depend from claims 1 and 8, applicant respectfully submits that those claims also satisfy the requirements under 35 U.S.C. § 101.

§ 112 Claim Rejections

Claims 11-16 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that applicant regards as the invention. The Office action states:

Claims 11-16 recite the limitation “a method of claim 10”, whereas claim 10 is drawn to a computer program product. There is insufficient antecedent basis for these limitations in claims 11-16.

(April 14, 2003 Office action, pg. 2).

Claims 11-16 have been amended to recite “computer program product” rather than “method.” Accordingly, applicant respectfully submits that claims 11-16, as amended, satisfies the requirements under 35 U.S.C. § 112, second paragraph.

§ 103 Claim Rejections

Claim 10 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,058,377 to Traub et al. in view of U.S. Patent No. 6,061,662 to Makivic. Claims 1, 8, 10, 17, 19, 26, 28, and 35 recite “forming a control variate.” Traub does not disclose “forming a control variate” anywhere. The Office action states:

Traub does not explicitly teach the step of forming a control variate based upon the estimated value of the portfolio, the estimated aggregate value of the portfolio, and an expected value of the aggregate value of the portfolio.

Makivic teaches using control variate to estimate the value of financial instruments. The choice of the functional form of the control variate depends on the value being estimated.

It would have been obvious to one with ordinary skill in the art at the time of the current invention to combine the steps taught by Makivic to the invention of Traub. The combination of the disclosures taken as a whole, suggests that users would have benefited from the advantages of this technique with respect to speed and cost savings over a traditional Monte Carlo technique.

(April 14, 2003 Office action, pg. 4).

The Office action, however, has not identified any passage of Makivic as disclosing “forming a control variate based upon the estimated value of the portfolio, the estimated aggregated value of the portfolio, and an expected value of the aggregate value of the portfolio,” as recited in claims 1, 10, 19, and 28 or “forming a control variate based upon the value of the portfolio, the aggregate value for the portfolio, and an expected value of the aggregate value for the portfolio,” as recited in claims 8, 17, 26, and 35. Makivic merely discloses:

An alternate embodiment of the method comprises using Eq. (20) as the basis of a control variate technique.

(Col. 8, ll. 54-56). Makivic does not disclose forming a control variate or how a control variate can be formed. Accordingly, even if Traub and Makivic were combined, the combination neither teaches nor suggests “forming a control variate” as recited in claims 1, 8, 10, 17, 19, 26, 28, and 35.

Traub further discloses:

For evaluation of the integral, numerical integration is preferred with the integrand being sampled at deterministic points having a low-discrepancy property. The technique produces approximate values at significant computational savings and with greater reliability as compared with the Monte Carlo technique. Further to estimating the value of a complex security, sampling at points of a low-discrepancy deterministic sequence can be used in estimating at risk in portfolio structuring.

(Abstract). Hence, Traub teaches away from the Monte Carlo technique used in Makivic as Traub contends that the Monte Carlo technique is computationally more expensive and is not as reliable. Moreover, Traub uses low-discrepancy sequences, which is an alternative technique to using control variates. *See* pg. 2, ll. 5-12 of the specification. Consequently, it would not have been obvious to one of ordinary skill in the art at the time of the current invention to combine the teachings of Traub and Makivic.

Accordingly, based at least on the above reasons, applicant respectfully submits that claims 1, 8, 10, 17, 19, 26, 28, and 35 are patentable over Traub in view of Makivic. Given that claims 2-7, 9, 11-16, 18, 20-25, 27, 29-34, and 36 depend from claims 1, 8, 10, 17, 19, 26, 28, and 35, it is respectfully submitted that those claims are patentable over Traub in view of Makivic for at least the same reasons.

CONCLUSION

On the basis of the above remarks, reconsideration and allowance of the claims is believed to be warranted and such action is respectfully requested. If the Examiner has any questions or comments, the Examiner is respectfully requested to contact the undersigned at the number listed below.

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